

We claim:

- 1 1. In a multi-protocol label switching (MPLS) data network comprised of a
2 plurality of data switches interconnected to form a plurality of data paths to a
3 destination node, a method of routing a first message between a second and a
4 first data switch comprised of the steps of:
5 a. identifying a reverse notification tree of data switches and data paths;
6 b. upon the occurrence of a pre-determined event, routing a first message
7 from said second switch to said first switch via said reverse notification
8 tree.
- 1 2. The data network of claim 1 wherein said reverse notification tree is co-
2 incident with a working path through said network.
- 1 3. The method of claim 1 wherein the topology of said reverse notification tree
2 can be represented by a directed acyclical graph.
- 1 4. The method of claim 1 wherein said data switches are asynchronous transfer
2 mode switches function as label switched routers.
- 1 5. The method of claim 1 wherein said data switches are internet protocol (IP)
2 routers.

- 1 6. The method of claim 1 wherein said data switches are digital cross connect
2 switches controlled by MPLS.
- 1 7. The method of claim 1 wherein said data switches are optical cross connects
2 and switches controlled by MPLS.
- 1 8. The method of claim 1 wherein at least one of said switches maintains a table
2 of incoming link and path identifiers and of outgoing link and path identifiers.
- 1 9. The method of claim 1 wherein said first data switch is a protection switch
2 element.
- 1 10. The method of claim 1 wherein said second data switch is a protection merge
2 element.
- 1 11. In a multi-protocol label switching (MPLS) network comprised of a plurality
2 of switching systems routing data to a destination switching system, a reverse
3 notification tree comprised of:
4 a. a destination switching system, to which data is sent from at least one data
5 switch that is upstream from said first destination switch;
6 b. a first upstream switching system;
7 c. a first upstream data link, coupling said destination switching system to
8 said first upstream switching system over which an upstream message is

[illegible]

1 13. The reverse notification tree of claim 11 where said destination switching
2 system maintains a table identifying upstream switching systems.